

State of Hawaii
DEPARTMENT OF LAND AND NATURAL RESOURCES
Division of Forestry and Wildlife
Honolulu, Hawaii 96813

May 11, 2007

Chairperson and Members
Board of Land and Natural Resources
State of Hawaii
Honolulu, Hawaii

Land Board Members:

SUBJECT: REQUEST FOR AMENDMENT OF THE HAWAII INVASIVE SPECIES CONTRACT 54535 with USDA – AGRICULTURAL RESEARCH CENTER SO THAT A TIME EXTENSION TO 6/15/10 MAY BE PURSUED

This Board Submittal approves the amendment to the Hawaii Invasive Species Council (HISC) contract 54535 with the USDA, involving building the technical capacity of the Hawaii Island Invasive Species Committees. The Board authorizes the Chairperson to enter into contract for these services, is subject to the certification of availability of funds and approval as to form by the Attorney General's Office.

BACKGROUND: The Department of Land and Natural Resources published a Request for Proposal (RFP) on May 13, 2005 on the State Procurement Office website for the FY06 HISC Program. The primary purpose of the HISC is to provide the institutional framework for leadership and coordination for a statewide invasive species prevention and control program.

HISC received an administrative budget of \$4 million for the initial year to provide support for the operations of the HISC and its cooperating partners, to develop a comprehensive state-wide invasive species prevention, control, research, application of new technology, and outreach program. Of that amount, 17 grants were selected for funding through the Research and Technology program requiring \$600,165 in HISC funding. These funds are matched with \$983,572 in non-state dollars.

The following HISC contract requires an amendment for a time extension (extended to 6/15/10):

<u>Contract 54535 – USDA</u>	<u>Contract Recipient</u>	<u>Contract Amount</u>
Identifying Sex Pheromone Components of the Nettle Caterpillar, <i>Darna pallivitta</i> (Moore), to Facilitate Detection and Pheromone Disruption Control	USDA – Agricultural Research Center PI: Dr. Eric B. Jang	50,000.00

CONTRACT PROVISIONS:

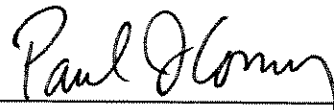
This amendment will be negotiated with the identified organization to implement the project in accordance with their awarded proposal. Upon approval by the Board, the Division will submit the amendment for review and approval as to form by the Attorney General, and process the document for signature by the Chairperson.

RECOMMENDATION:

That the Board authorizes the Chairperson to negotiate and execute the amendment to the contract 54535 as outlined above subject to:

1. Approval as to form by the Attorney General's Office.

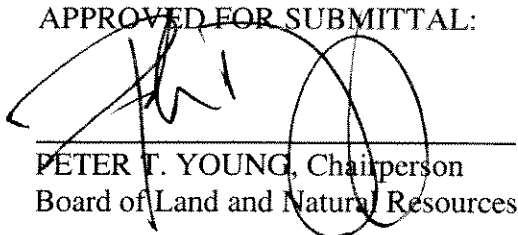
Respectfully submitted



PAUL J. CONRY, Administrator
Division of Forestry and Wildlife

Attachment

APPROVED FOR SUBMITTAL:



PETER T. YOUNG, Chairperson
Board of Land and Natural Resources

STATE OF HAWAII
CONTRACT FOR GOODS OR SERVICES
BASED UPON COMPETITIVE SEALED PROPOSALS

This Contract, executed on the respective dates indicated below, is effective as of April 5, 2006, between DEPARTMENT OF LAND AND NATURAL RESOURCES,
(Insert name of state department, agency, board or commission)
State of Hawaii ("STATE"), by its Chairperson
(Insert title of person signing for State)
(hereafter also referred to as the HEAD OF THE PURCHASING AGENCY ("HOPA")), whose
address is P.O. Box 621, Honolulu, Hawaii 96809 and the
U.S. Department of Agriculture (USDA) and Agricultural Research Service (ARS)
("CONTRACTOR"), a n agency of the U.S. government
(Insert corporation, partnership, joint venture, sole proprietorship, or other legal form of the Contractor)
under the laws of the State of United States, whose business address and taxpayer
identification number are as follows: 800 Buchanan Street, Albany, CA 94710

RECITALS

- A. The STATE desires to retain and engage the CONTRACTOR to provide the goods or services, or both, described in this Contract and its attachments, and the CONTRACTOR is agreeable to providing said goods or services or both.
- B. The STATE has issued a request for competitive sealed proposals, and has received and reviewed proposals submitted in response to the request.
- C. The solicitation for proposals and the selection of the CONTRACTOR were made in accordance with section 103D-303, Hawaii Revised Statutes ("HRS"), Hawaii Administrative Rules, Title 3, Department of Accounting and General Services, Subtitle 11 ("HAR"), Chapter 122, Subchapter 6, and applicable procedures established by the appropriate Chief Procurement Officer ("CPO").
- D. The CONTRACTOR has been identified as the responsible and responsive offeror whose proposal is the most advantageous for the STATE, taking into consideration price and the evaluation factors set forth in the request.
- E. Pursuant to HRS 171-6, the STATE is
(Legal authority to enter into this contract)
authorized to enter into this Contract.
- F. Money is available to fund this Contract pursuant to:
- (1) S-05-314-522
(Identify state sources)
- or (2) N/A
(Identify federal sources)

or both, in the following amounts:

State	\$ 50,000.00
Federal	\$ zero

NOW, THEREFORE, in consideration of the promises contained in this Contract, the STATE and the CONTRACTOR agree as follows:

1. Scope of Performance. The CONTRACTOR shall, in a proper and satisfactory manner as determined by the STATE, provide all the goods or services, or both, set forth in the request for competitive sealed proposals number HISC RT 003 ("RFP"), and the CONTRACTOR'S accepted proposal ("Proposal"), both of which, even if not physically attached to this Contract, are hereby made a part of this Contract.

2. Compensation. The CONTRACTOR shall be compensated for goods supplied or services performed, or both, under this CONTRACT in a total amount not to exceed Fifty thousand----- DOLLARS (\$ 50,000.00), including taxes, at the time and in the manner set forth in the RFP and CONTRACTOR'S Proposal.

3. Time of Performance. The services or goods required of the CONTRACTOR under this Contract shall be performed and completed in accordance with the Time of Performance set forth in Attachment 1, which is hereby made a part of this Contract.

4. Bonds. The CONTRACTOR ☐ is required to provide ☒ is not required to provide ☐ a performance bond ☐ a payment bond ☐ a performance and payment bond in the amount of _____ DOLLARS (\$ _____).

5. Standards of Conduct Declaration. The Standards of Conduct Declaration of the CONTRACTOR, is attached to and is made a part of this Contract.

6. Other Terms and Conditions. The General Conditions and any Special Conditions are attached hereto and made a part of this Contract. In the event of a conflict between the General Conditions and the Special Conditions, the Special Conditions shall control. In the event of a conflict among the documents, the order of precedence shall be as follows: (1) This Contract, including all attachments and addenda; (2) the RFP, including all attachments and addenda; and (3) Proposal.

7. Liquidated Damages. Liquidated damages shall be assessed in the amount of zero DOLLARS (\$ _____) per day, in accordance with the terms of paragraph 9 of the General Conditions.

8. Notices. Any written notice required to be given by a party to this Contract shall be (a) delivered personally, or (b) sent by United States first class mail, postage prepaid. Notice to the STATE shall be sent to the HOPA'S address indicated in the Contract. Notice to the CONTRACTOR shall be sent to the CONTRACTOR'S address indicated in the Contract. A notice shall be deemed to have been received three (3) days after mailing or at the time of actual receipt, whichever is earlier. The CONTRACTOR is responsible for notifying the STATE in writing of any change of address.

IN VIEW OF THE ABOVE, the parties execute this Contract by their signatures, on the dates below, to be effective as of the date first above written.

STATE


(Signature)

PETER T. YOUNG

(Print Name)

Chairperson

DEPARTMENT OF LAND AND NATURAL RESOURCES

(Print Title)

April 5, 2006

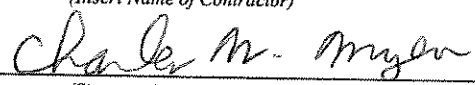
(Date)

CORPORATE SEAL
(If available)

CONTRACTOR

U.S. Department of Agriculture
Agricultural Research Service

(Insert Name of Contractor)


(Signature)

CHARLES W. MYERS

(Print Name)

Authorized Departmental Officer
Pacific West Area ARS-USDA *

(Print Title)

3/15/06

(Date)

APPROVED AS TO FORM:


Deputy Attorney General

*Evidence of authority of the CONTRACTOR'S representative to sign this Contract for the CONTRACTOR must be attached.

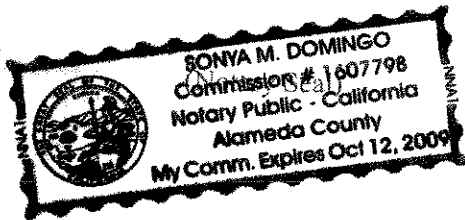


STATE OF HAWAII

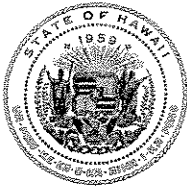
CONTRACTOR'S ACKNOWLEDGMENT

STATE OF California)
) SS.
 COUNTY OF Alameda)

On this 10th day of April, 2006 before me appeared
Charles W. Myers and _____, to me
known, to be the person(s) described in and, who, being by me duly sworn, did say that he/she/they is/are
Authorized Departmental Officer and _____ of
Pacific West Area ARS-USDA of USDA, ARS, the
CONTRACTOR named in the foregoing instrument, and that he/she/they is/are authorized to sign said
instrument on behalf of the CONTRACTOR, and acknowledges that he/she/they executed said
instrument as the free act and deed of the CONTRACTOR.



Sonya M. Domingo
(Signature)
Sonya M. Domingo, Notary Public
(Print Name)
Notary Public, State of California
My commission expires: Oct 12, 2009



STATE OF HAWAII
**CONTRACTOR'S
STANDARDS OF CONDUCT DECLARATION**

For the purposes of this declaration:

"Agency" means and includes the State, the legislature and its committees, all executive departments, boards, commissions, committees, bureaus, offices; and all independent commissions and other establishments of the state government but excluding the courts.

"Controlling interest" means an interest in a business or other undertaking which is sufficient in fact to control, whether the interest is greater or less than fifty per cent (50%).

"Employee" means any nominated, appointed, or elected officer or employee of the State, including members of boards, commissions, and committees, and employees under contract to the State or of the constitutional convention, but excluding legislators, delegates to the constitutional convention, justices, and judges. (Section 84-3, HRS).

On behalf of U.S. Department of Agriculture
Agricultural Research Service (ARS), CONTRACTOR, the undersigned does declare as follows:

1. CONTRACTOR ☐ is ☒ is not a legislator or an employee or a business in which a legislator or an employee has a controlling interest. (Section 84-15(a), HRS).
2. CONTRACTOR has not been represented or assisted personally in the matter by an individual who has been an employee of the agency awarding this Contract within the preceding two years and who participated while so employed in the matter with which the Contract is directly concerned. (Section 84-15(b), HRS).
3. CONTRACTOR has not been assisted or represented by a legislator or employee for a fee or other compensation to obtain this Contract and will not be assisted or represented by a legislator or employee for a fee or other compensation in the performance of this Contract, if the legislator or employee had been involved in the development or award of the Contract. (Section 84-14 (d), HRS).
4. CONTRACTOR has not been represented on matters related to this Contract, for a fee or other consideration by an individual who, within the past twelve (12) months, has been an agency employee, or in the case of the Legislature, a legislator, and participated while an employee or legislator on matters related to this Contract. (Sections 84-18(b) and (c), HRS).

CONTRACTOR understands that the Contract to which this document is attached is voidable on behalf of the STATE if this Contract was entered into in violation of any provision of chapter 84, Hawaii Revised Statutes, commonly referred to as the Code of Ethics, including the provisions which are the source of the declarations above. Additionally, any fee, compensation, gift, or profit received by any person as a result of a violation of the Code of Ethics may be recovered by the STATE.

CONTRACTOR

By Charles W. Myers
(Signature)

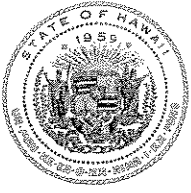
Print Name Charles W. Myers

Print Title Authorized Departmental Officer
Pacific West Area, ARS-USDA

Name of Contractor USDA, ARS

Date 4/10/06

* Reminder to Agency: If the "is" block is checked and if the Contract involves goods or services of a value in excess of \$10,000, the Contract must be awarded by competitive sealed bidding under section 103D-302, HRS, or a competitive sealed proposal under section 103D-303, HRS. Otherwise, the Agency may not award the Contract unless it posts a notice of its intent to award it and files a copy of the notice with the State Ethics Commission. (Section 84-15(a), HRS).



STATE OF HAWAII

SCOPE OF SERVICES

The Contractor shall perform and provide in a satisfactory and proper manner for and as determined by the Department of Land and Natural Resources, Division of Forestry and Wildlife, for a period of nineteen (19) months commencing from the official date on the notice to proceed, all in strict accordance with the terms and conditions of this agreement, the following:

- 1) Identify and synthesize or obtain sex pheromone components of the nettle caterpillar, *Darna pallivitta* (Moore), to allow rapid detection, pheromone disruption control, and monitor trapping of this pest species.
- 2) Collect or extract volatile pheromone material from *Darna pallivitta*.
- 3) Identify and analyze electrophysiologically active compounds (using gas chromatography or electroantennagram detection) and structural determinations (using gas chromatography or mass spectrometry).
- 4) Synthesize pure compounds of interest by existing methodology, or obtain from commercial sources.
- 5) Conduct behavior bioassays with compounds of interest singly and in blends.
- 6) Disseminate findings to action agencies and the scientific community through submission of journal articles, presentations at conferences, and personal contacts to insure further development of the technology for detection and control applications.
- 7) Plan further research with cooperators to implement findings in monitoring and control efforts.
- 8) Deliver a written progress report on or before April 1, 2006, either electronically or in hard copy. The report must document progress in the seven tasks listed above.
- 9) Deliver a final report upon completion of the project, either electronically or in hard copy. The report must document completion of the eight tasks listed above, including an executive summary of 250 words or less and digital photographs of the project.



STATE OF HAWAII

COMPENSATION AND PAYMENT SCHEDULE

- 1) Scope of Payment: In full consideration of the services to be performed under this Contract, the STATE agrees to pay the CONTRACTOR a total sum not to exceed FIFTY THOUSAND DOLLARS (\$50,000).
- 2) Advance Payment: Upon application by the CONTRACTOR, the STATE will make an advance payment upon presentation of an invoice in the amount of TWENTY-FIVE THOUSAND DOLLARS (\$25,000).
- 3) Progress Payments: Upon completion and acceptance of each and any of the first nine tasks in the Scope of Services (Attachment 1), and upon application by the CONTRACTOR, the STATE will make progress payments upon presentation of invoices for documented allowable reimbursable expenses, the total sum of which is not to exceed TWENTY THOUSAND DOLLARS (\$20,000). Payment of a progress payment shall not be construed as an absolute acceptance of the work done up to the time of the payments, but the entire work is subject to acceptance at the time the CONTRACTOR advises the STATE that the work is completed.
- 4) Retainage Payment: A retainage payment of FIVE THOUSAND DOLLARS (\$5,000) of the total payment shall be withheld by the STATE until the CONTRACTOR successfully complies with all terms of this agreement.
- 5) Initiating work: All work completed by the CONTRACTOR prior to the receipt of a fully-executed copy of this CONTRACT shall be at the CONTRACTOR's own volition, risk, and expense, including work performed during the period of any deliberations by the Board or Department of Land and Natural Resources in anticipation of a contract; provided, however, that if funding applicable to such work becomes available and is appropriated, the CONTRACTOR may be paid for such work even if performed prior to such approval.
- 6) Performance delays: The CONTRACTOR shall not be allowed additional compensation in the event of delays in performance.



STATE OF HAWAII

TIME OF PERFORMANCE

The time of performance is nineteen (19) months, commencing from the official date on the notice to proceed.

Schedule of Activities:

June-July 2005: Raise adult *D. pallivitta* moths and observe calling behavior.

August-September 2005: Pheromone collection/extraction, GC/EAD analysis of pheromone components and prepare progress report.

October-November 2005: Structural determination of active compounds and synthetic design.

December 2005-January 2006: Synthesize active compounds.

February-March 2006: Conduct behavioral bioassays in wind tunnel and field cage.

April-June 2006: Prepare manuscripts and final report. Discuss findings with state agencies. Make presentations at scientific meetings. Plan further research with cooperators to implement findings in monitoring and control efforts.

CERTIFICATE OF EXEMPTION FROM CIVIL SERVICE

1. By Heads of Departments or Agencies as Delegated by the Director of Human Resources Development.¹

Pursuant to a delegation of the authority by the Director of Human Resources Development ("DHRD"), I certify that the services to be provided under this Contract, and the person(s) providing the services under this Contract are exempt from the civil service, pursuant to section 76-16, Hawaii Revised Statutes ("HRS").

(Signature) _____

PETER T. YOUNG

April 5, 2006

Date

(Print Name) _____

Chairperson

DEPARTMENT OF LAND AND NATURAL RESOURCES

(Print Title) _____

¹This part of the form may be used by all department heads and others to whom the Director of DHRD has delegated authority to certify §76-16, HRS, civil service exemptions. The specific paragraph(s) of §76-16, HRS, upon which an exemption is based should be noted in the contract file. **NOTE:** Authority to certify exemptions under §§76-16(b)(2), 76-16(b)(12), and 76-16(b)(15), HRS, has not been delegated; only the Director of DHRD may certify §§76-16(b)(2), 76-16(b)(12), and 76-16(b)(15) exemptions.

2. By the Director of Human Resources Development.

I certify that the services to be provided under this Contract, and the person(s) providing the services under this Contract are exempt from the civil service, pursuant to section 76-16, HRS.

(Signature) _____

Date

(Print Name) _____

(Print Title, if designee of the Director of DHRD) _____



STATE OF HAWAII
SPECIAL CONDITIONS

1. The CONTRACTOR's key personnel and principal investigator is:

Eric B. Jang
Pacific Basin Agricultural Research Center
Agricultural Research Service
United States Department of Agriculture
P.O. Box 4459
Hilo, HI 97620
Ph: (808) 959-4340
Fax: (808) 959-4319
ejang@pbarc.ars.usda.gov

2. For purposes of this Contract to which this "Special Conditions" is attached, the following General Conditions are deleted and have no operative effect as between the parties:

- a. Paragraph 2.e.
- b. Paragraph 16. Costs and Expenses.

3. Delete General Conditions 7. Indemnification and Defense in its entirety and replace it with the following language:

7. Indemnification and Defense. The CONTRACTOR shall be liable for actions and decisions of its employees and agents to the extent allowable under Federal law.

4. Delete General Conditions 11. Disputes in its entirety and replace with the following language:

11. Disputes. Disputes shall be resolved in accordance with Section 103D-703, HRS, and Chapter 3-126, Hawaii Administrative Rules (HAR), as the same may be amended from time to time, and in accordance with Federal Law and Regulations.

5. Delete General Conditions 26. Ownership Rights and Copyright in its entirety and replace with the following language:

26. Use of Research. The STATE or the CONTRACTOR may use the materials developed, prepared, assembled, or created pursuant to this Contract for any and all purposes, without restriction or charge.

6. Delete General Conditions 34. Governing Law in its entirety and replace with the following language:

34. Governing Law. The validity of this Contract and any of its terms or provisions, as well as the rights and duties of the parties to this Contract, shall be governed by the laws of the State of Hawaii to the extent such laws are not inconsistent with Federal law.

HISC RT 003
HAWAII INVASIVE SPECIES COUNCIL
RESEARCH AND TECHNOLOGY PROGRAM

REQUEST FOR PROPOSALS

PROPOSALS DUE: NOVEMBER 3, 2004; JANUARY 3, 2005 AND APRIL 4, 2005.

The primary purpose of the program is to initiate and support research services that will result in improved management or control strategies for alien invasive species in Hawai'i.

Program Goals

- Encourage researchers to address the problems created by alien invasive species.
- Encourage the implementation of new technology to prevent the establishment or the control of invasive species
- Develop effective, science-based management approaches to control alien invasive species.
- Effectively communicate the results of research to the field where it can be applied.
- Promote interagency collaboration and stimulate new partnerships.

General Research Priorities

The Hawaii Invasive Species Council seeks to promote effective control and management of alien invasive species using the best available scientific information. Research proposals that address clear links between management and research or the effective application of new technology will be given first priority.

Proposal Guidelines

- a. Contact Information Cover Sheet
- b. Proposal using the following format (five page maximum, 12 point font, 1 inch margins)
 - Problem statement
 - Methodology or approach
 - Schedule of activities
 - Description of deliverable products
 - Personnel and Partners
 - Budget

Cover Sheet:

Provide contact information via U.S. postal service, e-mail and fax for the principle investigator of the proposal. The cover sheet should also have the title of the proposal and the total amount requested.

Problem Statement:

Briefly describe the significance of the problem, as well as the manner in which the proposed work will make a contribution to solving or understanding the problem. The problem statement should describe how new technology will be applied to address invasive species or how the scientific question will affect the development of improved management practices or understanding of an issue relating to Hawaii's invasive species. Provide a brief review of past and current research relevant to the problem.

Methodology or Approach:

Describe the objectives, approach, and methodology used in the proposed project.

Schedule of Activities:

Provide an activities timetable, including start date and project completion date. Project completion date must include the completion of deliverable products.

**Identifying Sex Pheromone Components of the Nettle Caterpillar, *Darna pallivitta* (Moore),
to Facilitate Detection and Pheromone Disruption Control**

Hawaii Invasive Species Council

Research and Technology Grant Program Proposal

Co-primary investigator:

Eric B. Jang
Pacific Basin Agricultural Research Center
Agricultural Research Service
United States Department of Agriculture
P.O. Box 4459
Hilo, HI 97620
Ph: (808) 959 4340
Fax: (808) 959 4319
ejang@pbarc.ars.usda.gov

Co-primary investigator:

Arnold H. Hara
Department of Plant and Environmental
Protection Sciences
University of Hawaii at Manoa
Beaumont Agricultural Research Center
461 West Lanikaula St
Hilo, HI 96720
Ph: (808) 974 4105
arnold@hawaii.edu

Co-primary investigator:

Matthew S. Siderhurst
Pacific Basin Agricultural Research Center
Agricultural Research Service
United States Department of Agriculture
P.O. Box 4459
Hilo, HI 97620
Ph: (808) 959 4318
Fax: (808) 959 4319
msiderhurst@pbarc.ars.usda.gov

Cooperator:

Patrick Conant
Hawaii Department of Agriculture
Division of Plant Industry
Plant Pest Control Branch
16 E. Lanikaula St.
Hawaii, 96814
Ph: (808) 974 4140
pat.conant@hawaii.gov

Amount Requested: \$50,000

Problem Statement:

THE PROBLEM: Current detection of the nettle caterpillar, *Darna pallivitta* (Moore), relies on light trapping and visual surveys, techniques that are less specific, slower and more time consuming than pheromone trapping. Identification and synthesis of a pheromone lure for *D. pallivitta* would not only allow rapid detection of this irritant-causing/economically-important invasive pest, but also provide control options such as pheromone mating disruption.

Infestations of the nettle caterpillar (Fig. 1), were first discovered at a nursery in Panaewa, on the eastern side of Hawaii in September 2001 (Conant et al. 2002). *D. pallivitta* is known to occur in Southeast Asia where it feeds on palms (coconut and areca) and grasses (Cock et al. 1987) and was possibly introduced to Hawaii with a shipment of Rhaps palm (*Rhapis excelsa*) seedlings from Taiwan (L. Nakahara, personal communication). Initial attempts to contain the *D. pallivitta* outbreak in eastern Hawaii were not successful and caterpillars are now found from Keaau through Hilo and the Hamakua coast. Contaminated nursery stock is a continuing source of possible outbreaks both on the Big Island and on other islands.

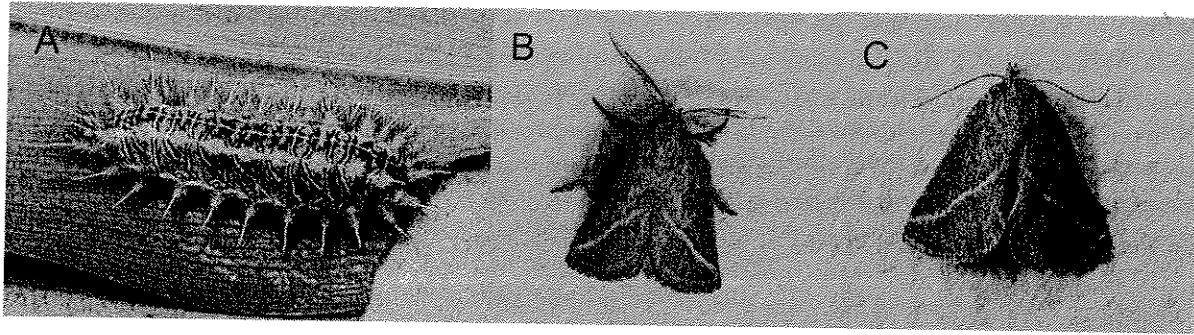


Figure 1. *Darna pallivitta*, (A) caterpillar, (B) adult male and (C) adult female moth.

D. pallivitta caterpillars have a wide host range, feeding voraciously on many agricultural crops, including coffee and macadamia, as well as landscape plants thereby threatening a nursery industry valued at \$97.7 million (National Agricultural Statistics Service 2004). Particularly susceptible to damage are palms, the single most valuable floriculture/nursery crop in Hawaii, and dracaenas, which were worth a combined \$12.9 million in 2003 (National Agricultural Statistics Service 2004). Hawaii county accounts for over half of the flower/nursery production of the state (National Agricultural Statistics Service 2004) and faces a threat both from direct caterpillar defoliation and by lost markets, illustrated by the rejection of a recent palm shipment by California and the fumigation of another on Maui. Economic losses due to nettle caterpillar are relatively small to date, but can be expected to rise dramatically if the moth is allowed to spread throughout the Big Island and to other islands.

Additionally, the caterpillar constitutes a human health hazard due to the painful sting which results from contact with its spines. The caterpillars are small, reaching a maximum length of 2 cm, and have mottled markings (Fig. 1), which can make them hard to see. The four longitudinal rows of spines covering the dorsal and lateral surfaces contain a toxin which is released into the skin on contact causing burning and itching. The frequency of human contact with the caterpillar is heightened by the large host range and gregarious tendencies of *D. pallivitta*. Increased spread of the moth is likely to cause irritation for agricultural workers, homeowners, and tourists who may be stung when touching or passing infested plants.

ADDRESSING THE PROBLEM: Preceding its discovery in Hawaii, nettle caterpillar was reported as an invasive species in Japan in 1997 (Tominaga 1999, Yoshimoto 1997) and has been the subject of ongoing monitoring and control work (Tominaga 2002, Tominaga 2004). Unfortunately this Japanese research was fairly limited and early control efforts in Hawaii were hampered by a lack of knowledge about *D. pallivitta*. Substantial subsequent work has been conducted on the biology of *D. pallivitta* including research on control approaches such as classical biological control with parasitoids and pesticide application (Chun et al. 2004). However, there remains a need for monitoring tools that allow rapid detection of this pest species, and long-term, low pesticide use control methods.

In general, Lepidoptera show very strong behavioral responses to conspecific sex pheromones and this has been heavily utilized in the detection and control of pest species (Cardé & Minks 1995, Ridgway et al. 1990, Jutsum & Gordon 1989). Identification of the *D. pallivitta* sex pheromone is expected to aid control efforts in two ways, 1) near-term development of lures for detection/monitoring, and 2) longer-term as a mating disruption control method. Having pheromone lures available will assist in delineating existing populations on the Big Island and allow studies to better understand the ecology of the moth. Additionally these lures could be used to monitor for introductions into currently uninfested areas on the Big Island and on other islands. While needing further development, a sex pheromone could in principle be used to disrupt the communication and mating of adult *D. pallivitta* moths, thus providing an alternative to insecticide treatment. The replacement of organophosphates with pheromone disruption is well illustrated by the use of this technique to control codling moth, *Cydia pomonella* (L.), an important economic pest of U.S. mainland tree crops (Calkins 1998, Gut & Brunner 1998).

Methodology:

OVERVIEW: Identification of the *D. pallivitta* pheromone will follow a four step experimental procedure; 1) collection or extraction of volatile pheromone material, 2) instrumental analysis, including identification of electrophysiologically active compounds (GC/EAD or EAG) and structural determinations (GC/MS), 3) synthesize pure compounds of interest by existing methodology, and 4) conduct behavior bioassays with compounds of interest singly and in blends.

INSECTS: *D. pallivitta* pupae will be provided from the laboratory colony maintained at the Hawaii Department of Agricultural, Plant Pest Control Branch, Hilo, HI in collaboration with Dr. Hara at the University of Hawaii, Beaumont Agricultural Research Center, Hilo, HI. Observations indicate that female moths are likely to call, or release pheromone, during the early morning (3-6 am) and initial experiments will be conducted to determine precisely when this occurs. The results of these observations will determine whether adults will have to be light gated to ensure calling within appropriate working hours.

PHEROMONE COLLECT: Headspace trapping of volatile sex pheromone materials from calling females will be the preferred method for collecting materials for analysis. Headspace collections will utilize solid phase microextraction (SPME) and/or a variety of absorbents (Porapak-Q, Tenex or Super-Q). If volatile collections fail to provide sufficient material for analysis, adult moths will be dissected to remove abdominal tips with pheromone glands.

ANALYSIS: Electrophysiology has been an important tool in pinpointing compounds with biological activity in past Lepidopteran sex pheromones determinations and will be an important tool in this project. Insect sensory organs (i.e. on antenna, tarsi, etc.) can be used to

quickly narrow a field of possible compounds on the basis of electrophysiological responses. In recent years, gas chromatography (GC) has been coupled with electroantennagram detection (EAD) to merge chemical separation with a biological detector. GC/EAD has streamlined the pheromone identification process and with the use of solid phase microextraction (SPME) has cut discovery times and solvent use. We have been successfully employing SPME and GC/EAD in identifying attractant volatiles for tephritid fruit fly species and will apply these techniques in identifying the nettle caterpillar pheromone. Volatile compounds from collections or extracts will be separated and assayed for electrophysiological activity by GC/EAD.

Compounds that show EAD activity will be initially characterized by GC/MS analysis. Structural assignments will be confirmed by comparison with synthetic authentic standards. Most Lepidopteran pheromones are derived from medium- to long-chain fatty acids (Miller 2000) and their identifications can be carried out by standard spectroscopic techniques. The chances of successfully characterizing the *D. pallivitta* pheromone are also improved by the recent identification and synthesis of pheromonal components in two related moths, *D. trima* and *D. bradleyi* (Sasaerila et al. 2000). The active pheromone components discovered in related Darna species are decadienoates (Fig. 2), a novel class of molecules not previously known in Lepidoptera (Sasaerila et al. 2000). This previous work can act as a guide in structural determination and the uniqueness of the compounds identified suggests that attraction to lures would be highly species specific.

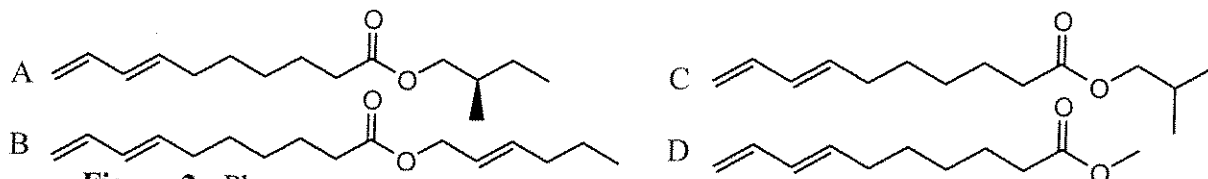


Figure 2. Pheromone components of related Darna species. *Darna trima*, (A) 2-methylbutyl (*E*)-7,9-decadienoate and (B) (*E*)-2-hexenyl (*E*)-7,9-decadienoate. *D. bradleyi*, (C) isobutyl (*E*)-7,9-decadienoate and (D) methyl (*E*)-7,9-decadienoate (Sasaerila et al. 2000).

COMPOUND SYNTHESIS: Potential pheromone components will be synthesized using existing methodology. If the active pheromone components are decadienoates, as is the case with other Darna species, (*E*)-7,9-decadienoic acid will be the nucleus for target synthesis. (*E*)-7,9-decadienoic acid will be prepared by the four-step procedure outlined by Sasaerila et al. (2000), and will be coupled with the appropriate alcohol(s) to furnish the required ester(s). Alcohols for ester condensation will be purchased from commercial sources if possible or synthesized as necessary.

BIOASSAYS: Putative sex pheromone components will be tested for attractancy in two arenas. The first arena is a glass/metal laboratory flight tunnel consisted of a 0.9 m x 0.9 m x 2.8 m rectangular glass arena equipped with inlet and exit fans, which produced a laminar flow of air (Jang et al. 1997). The second is a 2.5 m x 6 m x 15 m screen field cage containing fruit trees. Components will be tested singly and in blends to determine optimum pheromone composition.

Schedule of Activities:

15 Jun-Jul 2005: (start date) Raise adult *D. pallivitta* moths and observe calling behavior.

Aug-Sept 2005: Pheromone collection/extraction, GC/EAD analysis of pheromone components and prepare progress report.

Oct-Nov 2005: Structural determination of active compounds and synthetic design.

Dec-Jan 2005: Synthesize active compounds.

Feb-Mar 2006: Conduct behavioral bioassays in wind tunnel and field cage.

Apr-Jun 14 2006: (end date) Prepare manuscript(s) and final report. Discuss findings with state agencies. Make presentations at scientific meetings. Plan further research with cooperators to implement findings in monitoring and control efforts.

Description of Deliverable Products:

The deliverable product from this project will be a pheromone for *D. pallivitta* which will allow rapid detection and monitor trapping of this pest species. Results will be disseminated to action agencies and the scientific community through journal articles, conference presentations and personal contacts to insure further development of the technology for detection and control applications.

Personnel and Partners:

Dr. Eric Jang: Research leader/research entomologist, USDA-ARS-PBARC. Supervisory and expertise role. Background in insect semiochemicals, electrophysiology and behavior.

Dr. Matthew Siderhurst: Research entomologist, USDA-ARS-PBARC. Supervisory and day-to-day operations. Background in insect chemical ecology, natural products structural determination and organic synthesis.

Dr. Arnold Hara: Extension/research entomologist, UH Manoa. Provision, rearing and biology of *D. pallivitta* moths. Has been conducting research on the nettle caterpillar since initial outbreak. Research on *D. pallivitta* includes general biology, host range and pesticide treatments.

Patrick Conant: Regulatory/research entomologist, Hawaii Department of Agriculture. Provision and rearing of *D. pallivitta* moths. Has investigated nettle caterpillar since initial outbreak. Research on *D. pallivitta* includes general biology, rearing and control.

Budget:

USDA-ARS will be providing (in-kind) over two-thirds of the cost for this proposed project, including salaries, supplies, equipment and travel. GC/MS and GC/EAD instruments are both state-of-the-art and less than 2 years old. Additionally, much of the other equipment needed for this project is available and currently in use by ARS staff. The requested \$50,000 will be used for operational expenses, bioassay alterations, and travel to disseminate the results of the project as detailed below.

	Requested	USDA-ARS (matching)
Personnel – scientists, technicians, student help (GS-1)	\$10,000	\$50,000
Supplies – rearing supplies, chemicals for identification and synthesis, insect cages	\$15,000	\$10,000
Equipment – GC/EAD & GC/MS maintenance, EAD antenna holders, wind tunnel modifications, field cage maintenance	\$15,000	\$50,000
Travel – four inter-island trips and one mainland trip to present project results	\$5,000	\$5,000
Overhead – ARS-USDA overhead	\$5,000	
	<hr/> \$50,000	<hr/> \$115,000

Reference List

- Calkins, C. O. 1998. Review of the codling moth area-wide suppression program in the western United States. *Journal of Agricultural Entomology* 15:327-333.
- Cardé, R. T. & A. K. Minks. 1995. Control of moth pests by mating disruption: Successes and constraints. *Annual Review of Entomology* 40:559-585.
- Chun, S. G., A. H. Hara, & C. M. Jacobsen. 2004. Efficacy of insecticides against an invasive limacodid nettle caterpillar, 2003. *Arthropod Management Test* 29:L4.
- Cock, M. J. W., H. C. J. Godfray, & J. D. Holloway. 1987. Slug & nettle caterpillars: The biology, taxonomy and control of the Limacodidae of economic importance on palms in South-East Asia. CAB International, Wallingford, UK.
- Conant, P., A. H. Hara, L. M. Nakahara, and R. A. Heu. Nettle caterpillar, *Darna pallivitta* Moore (Lepidoptera: Limacodidae). New Pest Advisory No. 01-03. 2002. State of Hawaii, Department of Agriculture.
- Gut, L. J. & J. F. Brunner. 1998. Pheromone-based management of codling moth (Lepidoptera: Tortricidae) in Washington apple orchards. *Journal of Agricultural Entomology* 15:387-405.
- Jang, E. B., L. A. Carvalho, & J. D. Stark. 1997. Attraction of female oriental fruit fly, *Bactrocera dorsalis*, to volatile semiochemicals from leaves and extracts of a nonhost plant, *Panax* (*Polyscias guilfoylei*) in laboratory and olfactometer assays. *Journal of Chemical Ecology* 23:1389-1401.
- Jutsum, A. R. & R. F. S. Gordon. 1989. Insect pheromones in plant protection. Wiley, Chichester, UK.
- Miller, J. G. 2000. Polyene hydrocarbons and epoxides: a second major class of lepidopteran sex attractant pheromones. *Annu. Rev. Entomol.* 45:575.
- National Agricultural Statistics Service. Hawaii flowers & nursery products annual summary, 2003. 2004. United States Department of Agriculture.
- Ridgway, R. L., R. M. Silverstein, & M. N. Inscoe. 1990. Behavior-modifying chemicals for insect management, Applications of pheromones and other attractants. Marcel Dekker, New York.
- Sasaerila, Y., R. Gries, G. Gries, G. Khaskin, S. King, & T. C. Boo. 2000. Decadienoates: Sex pheromone components of nettle caterpillars *Darna trima* and *D. bradleyi*. *Journal of Chemical Ecology* 26:1969-1981.
- Tominaga, S. 1999. Larva of *Darna pallivitta* (Moore) (Limacodidae), established in Okinawa. *Japan Heterocerists' Journal* 202:36.
- Tominaga, S. 2002. Records of some migrant moths from Okinawa Island in 2001. *Yugato* 167:8.
- Tominaga, S. 2004. Records of some migrant moths from Okinawa Island in 2003. *Yugato* 176:59-60.
- Yoshimoto, H. 1997. *Darna pallivitta* (Moore) from Okinawa I., a limacodid moth new to Japan. *Japan Heterocerists' Journal* 192:273-274.

GENERAL CONDITIONS

Table of Contents

	<u>Page(s)</u>
1. Coordination of Services by the STATE	2
2. Relationship of Parties: Independent Contractor Status and Responsibilities, Including Tax	2
Responsibilities	2
3. Personnel Requirements	3
4. Nondiscrimination	3
5. Conflicts of Interest	3
6. Subcontracts and Assignments	3
7. Indemnification and Defense	4
8. Cost of Litigation	4
9. Liquidated Damages	4
10. STATE'S Right of Offset	4
11. Disputes	4
12. Suspension of Contract	4
13. Termination for Default	5
14. Termination for Convenience	6
15. Claims Based on the Agency Procurement Officer's Actions or Omissions	7
16. Costs and Expenses	8
17. Payment Procedures; Final Payment; Tax Clearance	9
18. Federal Funds	9
19. Modifications of Contract	9
20. Change Order	10
21. Price Adjustment	11
22. Variation in Quantity for Definite Quantity Contracts	11
23. Changes in Cost-Reimbursement Contract	11
24. Confidentiality of Material	12
25. Publicity	12
26. Ownership Rights and Copyright	12
27. Liens and Warranties	12
28. Audit of Books and Records of the CONTRACTOR	12
29. Cost or Pricing Data	12
30. Audit of Cost or Pricing Data	13
31. Records Retention	13
32. Antitrust Claims	13
33. Patented Articles	13
34. Governing Law	13
35. Compliance with Laws	13
36. Conflict between General Conditions and Procurement Rules	13
37. Entire Contract	13
38. Severability	13
39. Waiver	13
40. Pollution Control	14

GENERAL CONDITIONS

1. Coordination of Services by the STATE. The head of the purchasing agency ("HOPA") (which term includes the designee of the HOPA) shall coordinate the services to be provided by the CONTRACTOR in order to complete the performance required in the Contract. The CONTRACTOR shall maintain communications with HOPA at all stages of the CONTRACTOR'S work, and submit to HOPA for resolution any questions which may arise as to the performance of this Contract. "Purchasing agency" as used in these General Conditions means and includes any governmental body which is authorized under chapter 103D, HRS, or its implementing rules and procedures, or by way of delegation, to enter into contracts for the procurement of goods or services or both.
2. Relationship of Parties: Independent Contractor Status and Responsibilities, Including Tax Responsibilities.
 - a. In the performance of services required under this Contract, the CONTRACTOR is an "independent contractor," with the authority and responsibility to control and direct the performance and details of the work and services required under this Contract; however, the STATE shall have a general right to inspect work in progress to determine whether, in the STATE'S opinion, the services are being performed by the CONTRACTOR in compliance with this Contract. Unless otherwise provided by special condition, it is understood that the STATE does not agree to use the CONTRACTOR exclusively, and that the CONTRACTOR is free to contract to provide services to other individuals or entities while under contract with the STATE.
 - b. The CONTRACTOR and the CONTRACTOR'S employees and agents are not by reason of this Contract, agents or employees of the State for any purpose, and the CONTRACTOR and the CONTRACTOR'S employees and agents shall not be entitled to claim or receive from the State any vacation, sick leave, retirement, workers' compensation, unemployment insurance, or other benefits provided to state employees.
 - c. The CONTRACTOR shall be responsible for the accuracy, completeness, and adequacy of the CONTRACTOR'S performance under this Contract. Furthermore, the CONTRACTOR intentionally, voluntarily, and knowingly assumes the sole and entire liability to the CONTRACTOR'S employees and agents, and to any individual not a party to this Contract, for all loss, damage, or injury caused by the CONTRACTOR, or the CONTRACTOR'S employees or agents in the course of their employment.
 - d. The CONTRACTOR shall be responsible for payment of all applicable federal, state, and county taxes and fees which may become due and owing by the CONTRACTOR by reason of this Contract, including but not limited to (i) income taxes, (ii) employment related fees, assessments, and taxes, and (iii) general excise taxes. The CONTRACTOR also is responsible for obtaining all licenses, permits, and certificates that may be required in order to perform this Contract.
 - e. The CONTRACTOR shall obtain a general excise tax license from the Department of Taxation, State of Hawaii, in accordance with section 237-9, HRS, and shall comply with all requirements thereof. The CONTRACTOR shall obtain a tax clearance certificate from the Director of Taxation, State of Hawaii, showing that all delinquent taxes, if any, levied or accrued under state law against the CONTRACTOR have been paid and submit the same to the STATE prior to commencing any performance under this Contract. The CONTRACTOR shall also be solely responsible for meeting all requirements necessary to obtain the tax clearance certificate required for final payment under sections 103-53 and 103D-328, HRS, and paragraph 17 of these General Conditions.
 - f. The CONTRACTOR is responsible for securing all employee-related insurance coverage for the CONTRACTOR and the CONTRACTOR'S employees and agents that is or may be required by law, and for payment of all premiums, costs, and other liabilities associated with securing the insurance coverage.

3. Personnel Requirements.

- a. The CONTRACTOR shall secure, at the CONTRACTOR'S own expense, all personnel required to perform this Contract.
- b. The CONTRACTOR shall ensure that the CONTRACTOR'S employees or agents are experienced and fully qualified to engage in the activities and perform the services required under this Contract, and that all applicable licensing and operating requirements imposed or required under federal, state, or county law, and all applicable accreditation and other standards of quality generally accepted in the field of the activities of such employees and agents are complied with and satisfied.

4. Nondiscrimination. No person performing work under this Contract, including any subcontractor, employee, or agent of the CONTRACTOR, shall engage in any discrimination that is prohibited by any applicable federal, state, or county law.

5. Conflicts of Interest. The CONTRACTOR represents that neither the CONTRACTOR, nor any employee or agent of the CONTRACTOR, presently has any interest, and promises that no such interest, direct or indirect, shall be acquired, that would or might conflict in any manner or degree with the CONTRACTOR'S performance under this Contract.

6. Subcontracts and Assignments. The CONTRACTOR shall not assign or subcontract any of the CONTRACTOR'S duties, obligations, or interests under this Contract and no such assignment or subcontract shall be effective unless (i) the CONTRACTOR obtains the prior written consent of the STATE and (ii) the CONTRACTOR'S assignee or subcontractor submits to the STATE a tax clearance certificate from the Director of Taxation, State of Hawaii, showing that all delinquent taxes, if any, levied or accrued under state law against the CONTRACTOR'S assignee or subcontractor have been paid. Additionally, no assignment by the CONTRACTOR of the CONTRACTOR'S right to compensation under this Contract shall be effective unless and until the assignment is approved by the Comptroller of the State of Hawaii, as provided in section 40-58, HRS.

- a. Recognition of a successor in interest. When in the best interest of the State, a successor in interest may be recognized in an assignment contract in which the STATE, the CONTRACTOR and the assignee or transferee (hereinafter referred to as the "Assignee") agree that:

- (1) The Assignee assumes all of the CONTRACTOR'S obligations;
- (2) The CONTRACTOR remains liable for all obligations under this Contract but waives all rights under this Contract as against the STATE; and
- (3) The CONTRACTOR shall continue to furnish, and the Assignee shall also furnish, all required bonds.

- b. Change of name. When the CONTRACTOR asks to change the name in which it holds this Contract with the STATE, the procurement officer of the purchasing agency (hereinafter referred to as the "Agency procurement officer") shall, upon receipt of a document acceptable or satisfactory to the Agency procurement officer indicating such change of name (for example, an amendment to the CONTRACTOR'S articles of incorporation), enter into an amendment to this Contract with the CONTRACTOR to effect such a change of name. The amendment to this Contract changing the CONTRACTOR'S name shall specifically indicate that no other terms and conditions of this Contract are thereby changed.

- c. Reports. All assignment contracts and amendments to this Contract effecting changes of the CONTRACTOR'S name or novations hereunder shall be reported to the chief procurement officer (CPO) as defined in section 103D-203(a), HRS, within thirty days of the date that the assignment contract or amendment becomes effective.

- d. Actions affecting more than one purchasing agency. Notwithstanding the provisions of subparagraphs 6a through 6c herein, when the CONTRACTOR holds contracts with more than one purchasing

agency of the State, the assignment contracts and the novation and change of name amendments herein authorized shall be processed only through the CPO's office.

7. Indemnification and Defense. The CONTRACTOR shall defend, indemnify, and hold harmless the State of Hawaii, the contracting agency, and their officers, employees, and agents from and against all liability, loss, damage, cost, and expense, including all attorneys' fees, and all claims, suits, and demands therefore, arising out of or resulting from the acts or omissions of the CONTRACTOR or the CONTRACTOR'S employees, officers, agents, or subcontractors under this Contract. The provisions of this paragraph shall remain in full force and effect notwithstanding the expiration or early termination of this Contract.
8. Cost of Litigation. In case the STATE shall, without any fault on its part, be made a party to any litigation commenced by or against the CONTRACTOR in connection with this Contract, the CONTRACTOR shall pay all costs and expenses incurred by or imposed on the STATE, including attorneys' fees.
9. Liquidated Damages. When the CONTRACTOR is given notice of delay or nonperformance as specified in paragraph 13 (Termination for Default) and fails to cure in the time specified, it is agreed the CONTRACTOR shall pay to the STATE the amount, if any, set forth in this Contract per calendar day from the date set for cure until either (i) the STATE reasonably obtains similar goods or services, or both, if the CONTRACTOR is terminated for default, or (ii) until the CONTRACTOR provides the goods or services, or both, if the CONTRACTOR is not terminated for default. To the extent that the CONTRACTOR'S delay or nonperformance is excused under paragraph 13d (Excuse for Nonperformance or Delay Performance), liquidated damages shall not be assessable against the CONTRACTOR. The CONTRACTOR remains liable for damages caused other than by delay.
10. STATE'S Right of Offset. The STATE may offset against any monies or other obligations the STATE owes to the CONTRACTOR under this Contract, any amounts owed to the State of Hawaii by the CONTRACTOR under this Contract or any other contracts, or pursuant to any law or other obligation owed to the State of Hawaii by the CONTRACTOR, including, without limitation, the payment of any taxes or levies of any kind or nature. The STATE will notify the CONTRACTOR in writing of any offset and the nature of such offset. For purposes of this paragraph, amounts owed to the State of Hawaii shall not include debts or obligations which have been liquidated, agreed to by the CONTRACTOR, and are covered by an installment payment or other settlement plan approved by the State of Hawaii, provided, however, that the CONTRACTOR shall be entitled to such exclusion only to the extent that the CONTRACTOR is current with, and not delinquent on, any payments or obligations owed to the State of Hawaii under such payment or other settlement plan.
11. Disputes. Disputes shall be resolved in accordance with section 103D-703, HRS, and chapter 3-126, Hawaii Administrative Rules ("HAR"), as the same may be amended from time to time.
12. Suspension of Contract. The STATE reserves the right at any time and for any reason to suspend this Contract for any reasonable period, upon written notice to the CONTRACTOR in accordance with the provisions herein.
 - a. Order to stop performance. The Agency procurement officer may, by written order to the CONTRACTOR, at any time, and without notice to any surety, require the CONTRACTOR to stop all or any part of the performance called for by this Contract. This order shall be for a specified period not exceeding sixty (60) days after the order is delivered to the CONTRACTOR, unless the parties agree to any further period. Any such order shall be identified specifically as a stop performance order issued pursuant to this section. Stop performance orders shall include, as appropriate: (1) A clear description of the work to be suspended; (2) Instructions as to the issuance of further orders by the CONTRACTOR for material or services; (3) Guidance as to action to be taken on subcontracts; and (4) Other instructions and suggestions to the CONTRACTOR for minimizing costs. Upon receipt of such an order, the CONTRACTOR shall forthwith comply with its terms and suspend all performance under this Contract at the time stated, provided, however, the CONTRACTOR shall take all reasonable steps to minimize the occurrence of costs allocable to the performance covered by the order during the period of performance stoppage. Before the stop performance order expires, or within any further period to which the parties shall have agreed, the Agency procurement officer shall either:
 - (1) Cancel the stop performance order; or

(2) Terminate the performance covered by such order as provided in the termination for default provision or the termination for convenience provision of this Contract.

b. Cancellation or expiration of the order. If a stop performance order issued under this section is cancelled at any time during the period specified in the order, or if the period of the order or any extension thereof expires, the CONTRACTOR shall have the right to resume performance. An appropriate adjustment shall be made in the delivery schedule or contract price, or both, and the Contract shall be modified in writing accordingly, if:

(1) The stop performance order results in an increase in the time required for, or in the CONTRACTOR'S cost properly allocable to, the performance of any part of this Contract; and

(2) The CONTRACTOR asserts a claim for such an adjustment within thirty (30) days after the end of the period of performance stoppage; provided that, if the Agency procurement officer decides that the facts justify such action, any such claim asserted may be received and acted upon at any time prior to final payment under this Contract.

c. Termination of stopped performance. If a stop performance order is not cancelled and the performance covered by such order is terminated for default or convenience, the reasonable costs resulting from the stop performance order shall be allowable by adjustment or otherwise.

d. Adjustment of price. Any adjustment in contract price made pursuant to this paragraph shall be determined in accordance with the price adjustment provision of this Contract.

13. Termination for Default.

a. Default. If the CONTRACTOR refuses or fails to perform any of the provisions of this Contract with such diligence as will ensure its completion within the time specified in this Contract, or any extension thereof, otherwise fails to timely satisfy the Contract provisions, or commits any other substantial breach of this Contract, the Agency procurement officer may notify the CONTRACTOR in writing of the delay or non-performance and if not cured in ten (10) days or any longer time specified in writing by the Agency procurement officer, such officer may terminate the CONTRACTOR'S right to proceed with the Contract or such part of the Contract as to which there has been delay or a failure to properly perform. In the event of termination in whole or in part, the Agency procurement officer may procure similar goods or services in a manner and upon the terms deemed appropriate by the Agency procurement officer. The CONTRACTOR shall continue performance of the Contract to the extent it is not terminated and shall be liable for excess costs incurred in procuring similar goods or services.

b. CONTRACTOR'S duties. Notwithstanding termination of the Contract and subject to any directions from the Agency procurement officer, the CONTRACTOR shall take timely, reasonable, and necessary action to protect and preserve property in the possession of the CONTRACTOR in which the STATE has an interest.

c. Compensation. Payment for completed goods and services delivered and accepted by the STATE shall be at the price set forth in the Contract. Payment for the protection and preservation of property shall be in an amount agreed upon by the CONTRACTOR and the Agency procurement officer. If the parties fail to agree, the Agency procurement officer shall set an amount subject to the CONTRACTOR'S rights under chapter 3-126, HAR. The STATE may withhold from amounts due the CONTRACTOR such sums as the Agency procurement officer deems to be necessary to protect the STATE against loss because of outstanding liens or claims and to reimburse the STATE for the excess costs expected to be incurred by the STATE in procuring similar goods and services.

d. Excuse for nonperformance or delayed performance. The CONTRACTOR shall not be in default by reason of any failure in performance of this Contract in accordance with its terms, including any failure by the CONTRACTOR to make progress in the prosecution of the performance hereunder which endangers such performance, if the CONTRACTOR has notified the Agency procurement

officer within fifteen (15) days after the cause of the delay and the failure arises out of causes such as: acts of God; acts of a public enemy; acts of the State and any other governmental body in its sovereign or contractual capacity; fires; floods; epidemics; quarantine restrictions; strikes or other labor disputes; freight embargoes; or unusually severe weather. If the failure to perform is caused by the failure of a subcontractor to perform or to make progress, and if such failure arises out of causes similar to those set forth above, the CONTRACTOR shall not be deemed to be in default, unless the goods and services to be furnished by the subcontractor were reasonably obtainable from other sources in sufficient time to permit the CONTRACTOR to meet the requirements of the Contract. Upon request of the CONTRACTOR, the Agency procurement officer shall ascertain the facts and extent of such failure, and, if such officer determines that any failure to perform was occasioned by any one or more of the excusable causes, and that, but for the excusable cause, the CONTRACTOR'S progress and performance would have met the terms of the Contract, the delivery schedule shall be revised accordingly, subject to the rights of the STATE under this Contract. As used in this paragraph, the term "subcontractor" means subcontractor at any tier.

- e. Erroneous termination for default. If, after notice of termination of the CONTRACTOR'S right to proceed under this paragraph, it is determined for any reason that the CONTRACTOR was not in default under this paragraph, or that the delay was excusable under the provisions of subparagraph 13d, "Excuse for nonperformance or delayed performance," the rights and obligations of the parties shall be the same as if the notice of termination had been issued pursuant to paragraph 14.
- f. Additional rights and remedies. The rights and remedies provided in this paragraph are in addition to any other rights and remedies provided by law or under this Contract.

14. Termination for Convenience.

- a. Termination. The Agency procurement officer may, when the interests of the STATE so require, terminate this Contract in whole or in part, for the convenience of the STATE. The Agency procurement officer shall give written notice of the termination to the CONTRACTOR specifying the part of the Contract terminated and when termination becomes effective.
- b. CONTRACTOR'S obligations. The CONTRACTOR shall incur no further obligations in connection with the terminated performance and on the date(s) set in the notice of termination the CONTRACTOR will stop performance to the extent specified. The CONTRACTOR shall also terminate outstanding orders and subcontracts as they relate to the terminated performance. The CONTRACTOR shall settle the liabilities and claims arising out of the termination of subcontracts and orders connected with the terminated performance subject to the STATE'S approval. The Agency procurement officer may direct the CONTRACTOR to assign the CONTRACTOR'S right, title, and interest under terminated orders or subcontracts to the STATE. The CONTRACTOR must still complete the performance not terminated by the notice of termination and may incur obligations as necessary to do so.
- c. Right to goods and work product. The Agency procurement officer may require the CONTRACTOR to transfer title and deliver to the STATE in the manner and to the extent directed by the Agency procurement officer:
 - (1) Any completed goods or work product; and
 - (2) The partially completed goods and materials, parts, tools, dies, jigs, fixtures, plans, drawings, information, and contract rights (hereinafter called "manufacturing material") as the CONTRACTOR has specifically produced or specially acquired for the performance of the terminated part of this Contract.

The CONTRACTOR shall, upon direction of the Agency procurement officer, protect and preserve property in the possession of the CONTRACTOR in which the STATE has an interest. If the Agency procurement officer does not exercise this right, the CONTRACTOR shall use best efforts to sell such goods and manufacturing materials. Use of this paragraph in no way implies that the STATE has breached the Contract by exercise of the termination for convenience provision.

d. Compensation.

- (1) The CONTRACTOR shall submit a termination claim specifying the amounts due because of the termination for convenience together with the cost or pricing data, submitted to the extent required by chapter 3-122, HAR, bearing on such claim. If the CONTRACTOR fails to file a termination claim within one year from the effective date of termination, the Agency procurement officer may pay the CONTRACTOR, if at all, an amount set in accordance with subparagraph 14d(3) below.
- (2) The Agency procurement officer and the CONTRACTOR may agree to a settlement provided the CONTRACTOR has filed a termination claim supported by cost or pricing data submitted as required and that the settlement does not exceed the total Contract price plus settlement costs reduced by payments previously made by the STATE, the proceeds of any sales of goods and manufacturing materials under subparagraph 14c, and the Contract price of the performance not terminated.
- (3) Absent complete agreement under subparagraph 14d(2) the Agency procurement officer shall pay the CONTRACTOR the following amounts, provided payments agreed to under subparagraph 14d(2) shall not duplicate payments under this subparagraph for the following:
 - (A) Contract prices for goods or services accepted under the Contract;
 - (B) Costs incurred in preparing to perform and performing the terminated portion of the performance plus a fair and reasonable profit on such portion of the performance, such profit shall not include anticipatory profit or consequential damages, less amounts paid or to be paid for accepted goods or services; provided, however, that if it appears that the CONTRACTOR would have sustained a loss if the entire Contract would have been completed, no profit shall be allowed or included and the amount of compensation shall be reduced to reflect the anticipated rate of loss;
 - (C) Costs of settling and paying claims arising out of the termination of subcontracts or orders pursuant to subparagraph 14b. These costs must not include costs paid in accordance with subparagraph 14d(3)(B);
 - (D) The reasonable settlement costs of the CONTRACTOR, including accounting, legal, clerical, and other expenses reasonably necessary for the preparation of settlement claims and supporting data with respect to the terminated portion of the Contract and for the termination of subcontracts thereunder, together with reasonable storage, transportation, and other costs incurred in connection with the protection or disposition of property allocable to the terminated portion of this Contract. The total sum to be paid the CONTRACTOR under this subparagraph shall not exceed the total Contract price plus the reasonable settlement costs of the CONTRACTOR reduced by the amount of payments otherwise made, the proceeds of any sales of supplies and manufacturing materials under subparagraph 14d(2), and the contract price of performance not terminated.
- (4) Costs claimed, agreed to, or established under subparagraphs 14d(2) and 14d(3) shall be in accordance with Chapter 3-123 (Cost Principles) of the Procurement Rules.

15. Claims Based on the Agency Procurement Officer's Actions or Omissions.

- a. Changes in scope. If any action or omission on the part of the Agency procurement officer (which term includes the designee of such officer for purposes of this paragraph 15) requiring performance changes within the scope of the Contract constitutes the basis for a claim by the CONTRACTOR for additional compensation, damages, or an extension of time for completion, the CONTRACTOR shall continue with performance of the Contract in compliance with the directions or orders of such

officials, but by so doing, the CONTRACTOR shall not be deemed to have prejudiced any claim for additional compensation, damages, or an extension of time for completion; provided:

(1) Written notice required. The CONTRACTOR shall give written notice to the Agency procurement officer:

(A) Prior to the commencement of the performance involved, if at that time the CONTRACTOR knows of the occurrence of such action or omission;

(B) Within thirty (30) days after the CONTRACTOR knows of the occurrence of such action or omission, if the CONTRACTOR did not have such knowledge prior to the commencement of the performance; or

(C) Within such further time as may be allowed by the Agency procurement officer in writing.

(2) Notice content. This notice shall state that the CONTRACTOR regards the act or omission as a reason which may entitle the CONTRACTOR to additional compensation, damages, or an extension of time. The Agency procurement officer, upon receipt of such notice, may rescind such action, remedy such omission, or take such other steps as may be deemed advisable in the discretion of the Agency procurement officer;

(3) Basis must be explained. The notice required by subparagraph 15a(1) describes as clearly as practicable at the time the reasons why the CONTRACTOR believes that additional compensation, damages, or an extension of time may be remedies to which the CONTRACTOR is entitled; and

(4) Claim must be justified. The CONTRACTOR must maintain and, upon request, make available to the Agency procurement officer within a reasonable time, detailed records to the extent practicable, and other documentation and evidence satisfactory to the STATE, justifying the claimed additional costs or an extension of time in connection with such changes.

b. CONTRACTOR not excused. Nothing herein contained, however, shall excuse the CONTRACTOR from compliance with any rules or laws precluding any state officers and CONTRACTOR from acting in collusion or bad faith in issuing or performing change orders which are clearly not within the scope of the Contract.

c. Price adjustment. Any adjustment in the price made pursuant to this paragraph shall be determined in accordance with the price adjustment provision of this Contract.

16. Costs and Expenses. Any reimbursement due the CONTRACTOR for per diem and transportation expenses under this Contract shall be subject to chapter 3-123 (Cost Principles), HAR, and the following guidelines:

a. Reimbursement for air transportation shall be for actual cost or coach class air fare, whichever is less.

b. Reimbursement for ground transportation costs shall not exceed the actual cost of renting an intermediate-sized vehicle.

c. Unless prior written approval of the HOPA is obtained, reimbursement for subsistence allowance (i.e., hotel and meals, etc.) shall not exceed the applicable daily authorized rates for inter-island or out-of-state travel that are set forth in the current Governor's Executive Order authorizing adjustments in salaries and benefits for state officers and employees in the executive branch who are excluded from collective bargaining coverage.

17. Payment Procedures: Final Payment; Tax Clearance.

- a. Original invoices required. All payments under this Contract shall be made only upon submission by the CONTRACTOR of original invoices specifying the amount due and certifying that services requested under the Contract have been performed by the CONTRACTOR according to the Contract.
- b. Subject to available funds. Such payments are subject to availability of funds and allotment by the Director of Finance in accordance with chapter 37, HRS. Further, all payments shall be made in accordance with and subject to chapter 40, HRS.
- c. Prompt payment.
 - (1) Any money, other than retainage, paid to the CONTRACTOR shall be disbursed to subcontractors within ten (10) days after receipt of the money in accordance with the terms of the subcontract; provided that the subcontractor has met all the terms and conditions of the subcontract and there are no bona fide disputes; and
 - (2) Upon final payment to the CONTRACTOR, full payment to the subcontractor, including retainage, shall be made within ten (10) days after receipt of the money; provided that there are no bona fide disputes over the subcontractor's performance under the subcontract.
- d. Final payment. Final payment under this Contract shall be subject to sections 103-53 and 103D-328, HRS, which require a tax clearance from the Director of Taxation, State of Hawaii, showing that all delinquent taxes, if any, levied or accrued under state law against the CONTRACTOR have been paid.

18. Federal Funds. If this Contract is payable in whole or in part from federal funds, CONTRACTOR agrees that, as to the portion of the compensation under this Contract to be payable from federal funds, the CONTRACTOR shall be paid only from such funds received from the federal government, and shall not be paid from any other funds. Failure of the STATE to receive anticipated federal funds shall not be considered a breach by the STATE or an excuse for nonperformance by the CONTRACTOR.

19. Modifications of Contract.

- a. In writing. Any modification, alteration, amendment, change, or extension of any term, provision, or condition of this Contract permitted by this Contract shall be made by written amendment to this Contract, signed by the CONTRACTOR and the STATE, provided that change orders shall be made in accordance with paragraph 20 herein.
- b. No oral modification. No oral modification, alteration, amendment, change, or extension of any term, provision, or condition of this Contract shall be permitted.
- c. Agency procurement officer. By written order, at any time, and without notice to any surety, the Agency procurement officer may unilaterally order of the CONTRACTOR:
 - (A) Changes in the work within the scope of the Contract; and
 - (B) Changes in the time of performance of the Contract that do not alter the scope of the Contract work.
- d. Adjustments of price or time for performance. If any modification increases or decreases the CONTRACTOR'S cost of, or the time required for, performance of any part of the work under this Contract, an adjustment shall be made and this Contract modified in writing accordingly. Any adjustment in contract price made pursuant to this clause shall be determined, where applicable, in accordance with the price adjustment clause of this Contract or as negotiated.

- e. Claim barred after final payment. No claim by the CONTRACTOR for an adjustment hereunder shall be allowed if written modification of the Contract is not made prior to final payment under this Contract.
 - f. Claims not barred. In the absence of a written contract modification, nothing in this clause shall be deemed to restrict the CONTRACTOR'S right to pursue a claim under this Contract or for a breach of contract.
 - g. CPO approval. If this is a professional services contract awarded pursuant to section 103D-303 or 103D-304, HRS, any modification, alteration, amendment, change, or extension of any term, provision, or condition of this Contract which increases the amount payable to the CONTRACTOR by at least \$25,000.00 or ten per cent (10%) of the initial contract price, whichever increase is higher, must receive the prior approval of the CPO.
 - h. Tax clearance. The STATE may, at its discretion, require the CONTRACTOR to submit to the STATE, prior to the STATE'S approval of any modification, alteration, amendment, change, or extension of any term, provision, or condition of this Contract, a tax clearance from the Director of Taxation, State of Hawaii, showing that all delinquent taxes, if any, levied or accrued under state law against the CONTRACTOR have been paid.
 - i. Sole source contracts. Amendments to sole source contracts that would change the original scope of the Contract may only be made with the approval of the CPO. Annual renewal of a sole source contract for services should not be submitted as an amendment.
20. Change Order. The Agency procurement officer may, by a written order signed only by the STATE, at any time, and without notice to any surety, and subject to all appropriate adjustments, make changes within the general scope of this Contract in any one or more of the following:
- (1) Drawings, designs, or specifications, if the goods or services to be furnished are to be specially provided to the STATE in accordance therewith;
 - (2) Method of delivery; or
 - (3) Place of delivery.
- a. Adjustments of price or time for performance. If any change order increases or decreases the CONTRACTOR'S cost of, or the time required for, performance of any part of the work under this Contract, whether or not changed by the order, an adjustment shall be made and the Contract modified in writing accordingly. Any adjustment in the Contract price made pursuant to this provision shall be determined in accordance with the price adjustment provision of this Contract. Failure of the parties to agree to an adjustment shall not excuse the CONTRACTOR from proceeding with the Contract as changed, provided that the Agency procurement officer promptly and duly makes the provisional adjustments in payment or time for performance as may be reasonable. By proceeding with the work, the CONTRACTOR shall not be deemed to have prejudiced any claim for additional compensation, or any extension of time for completion.
 - b. Time period for claim. Within ten (10) days after receipt of a written change order under subparagraph 20a, unless the period is extended by the Agency procurement officer in writing, the CONTRACTOR shall respond with a claim for an adjustment. The requirement for a timely written response by CONTRACTOR cannot be waived and shall be a condition precedent to the assertion of a claim.
 - c. Claim barred after final payment. No claim by the CONTRACTOR for an adjustment hereunder shall be allowed if a written response is not given prior to final payment under this Contract.
 - d. Other claims not barred. In the absence of a change order, nothing in this paragraph 20 shall be deemed to restrict the CONTRACTOR'S right to pursue a claim under the Contract or for breach of contract.

21. Price Adjustment.

- a. Price adjustment. Any adjustment in the contract price pursuant to a provision in this Contract shall be made in one or more of the following ways:
- (1) By agreement on a fixed price adjustment before commencement of the pertinent performance or as soon thereafter as practicable;
 - (2) By unit prices specified in the Contract or subsequently agreed upon;
 - (3) By the costs attributable to the event or situation covered by the provision, plus appropriate profit or fee, all as specified in the Contract or subsequently agreed upon;
 - (4) In such other manner as the parties may mutually agree; or
 - (5) In the absence of agreement between the parties, by a unilateral determination by the Agency procurement officer of the costs attributable to the event or situation covered by the provision, plus appropriate profit or fee, all as computed by the Agency procurement officer in accordance with generally accepted accounting principles and applicable sections of chapters 3-123 and 3-126, HAR.
- b. Submission of cost or pricing data. The CONTRACTOR shall provide cost or pricing data for any price adjustments subject to the provisions of chapter 3-122, HAR.

22. Variation in Quantity for Definite Quantity Contracts. Upon the agreement of the STATE and the CONTRACTOR, the quantity of goods or services, or both, if a definite quantity is specified in this Contract, may be increased by a maximum of ten per cent (10%); provided the unit prices will remain the same except for any price adjustments otherwise applicable; and the Agency procurement officer makes a written determination that such an increase will either be more economical than awarding another contract or that it would not be practical to award another contract.

23. Changes in Cost-Reimbursement Contract. If this Contract is a cost-reimbursement contract, the following provisions shall apply:

- a. The Agency procurement officer may at any time by written order, and without notice to the sureties, if any, make changes within the general scope of the Contract in any one or more of the following:
- (1) Description of performance (Attachment 1);
 - (2) Time of performance (i.e., hours of the day, days of the week, etc.);
 - (3) Place of performance of services;
 - (4) Drawings, designs, or specifications when the supplies to be furnished are to be specially manufactured for the STATE in accordance with the drawings, designs, or specifications;
 - (5) Method of shipment or packing of supplies; or
 - (6) Place of delivery.
- b. If any change causes an increase or decrease in the estimated cost of, or the time required for performance of, any part of the performance under this Contract, whether or not changed by the order, or otherwise affects any other terms and conditions of this Contract, the Agency procurement officer shall make an equitable adjustment in the (1) estimated cost, delivery or completion schedule, or both; (2) amount of any fixed fee; and (3) other affected terms and shall modify the Contract accordingly.

- c. The CONTRACTOR must assert the CONTRACTOR'S rights to an adjustment under this provision within thirty (30) days from the day of receipt of the written order. However, if the Agency procurement officer decides that the facts justify it, the Agency procurement officer may receive and act upon a proposal submitted before final payment under the Contract.
- d. Failure to agree to any adjustment shall be a dispute under paragraph 11 of this Contract. However, nothing in this provision shall excuse the CONTRACTOR from proceeding with the Contract as changed.
- e. Notwithstanding the terms and conditions of subparagraphs 23a and 23b, the estimated cost of this Contract and, if this Contract is incrementally funded, the funds allotted for the performance of this Contract, shall not be increased or considered to be increased except by specific written modification of the Contract indicating the new contract estimated cost and, if this contract is incrementally funded, the new amount allotted to the contract.

24. Confidentiality of Material.

- a. All material given to or made available to the CONTRACTOR by virtue of this Contract, which is identified as proprietary or confidential information, will be safeguarded by the CONTRACTOR and shall not be disclosed to any individual or organization without the prior written approval of the STATE.
- b. All information, data, or other material provided by the CONTRACTOR to the STATE shall be subject to the Uniform Information Practices Act, chapter 92F, HRS.

25. Publicity. The CONTRACTOR shall not refer to the STATE, or any office, agency, or officer thereof, or any state employee, including the HOPA, the CPO, the Agency procurement officer, or to the services or goods, or both, provided under this Contract, in any of the CONTRACTOR'S brochures, advertisements, or other publicity of the CONTRACTOR. All media contacts with the CONTRACTOR about the subject matter of this Contract shall be referred to the Agency procurement officer.

26. Ownership Rights and Copyright. The STATE shall have complete ownership of all material, both finished and unfinished, which is developed, prepared, assembled, or conceived by the CONTRACTOR pursuant to this Contract, and all such material shall be considered "works made for hire." All such material shall be delivered to the STATE upon expiration or termination of this Contract. The STATE, in its sole discretion, shall have the exclusive right to copyright any product, concept, or material developed, prepared, assembled, or conceived by the CONTRACTOR pursuant to this Contract.

27. Liens and Warranties. Goods provided under this Contract shall be provided free of all liens and provided together with all applicable warranties, or with the warranties described in the Contract documents, whichever are greater.

28. Audit of Books and Records of the CONTRACTOR. The STATE may, at reasonable times and places, audit the books and records of the CONTRACTOR, prospective contractor, subcontractor, or prospective subcontractor which are related to:

- a. The cost or pricing data, and
- b. A state contract, including subcontracts, other than a firm fixed-price contract.

29. Cost or Pricing Data. Cost or pricing data must be submitted to the Agency procurement officer and timely certified as accurate for contracts over \$100,000 unless the contract is for a multiple-term or as otherwise specified by the Agency procurement officer. Unless otherwise required by the Agency procurement officer, cost or pricing data submission is not required for contracts awarded pursuant to competitive sealed bid procedures.

If certified cost or pricing data are subsequently found to have been inaccurate, incomplete, or noncurrent as of the date stated in the certificate, the STATE is entitled to an adjustment of the contract price, including profit

or fee, to exclude any significant sum by which the price, including profit or fee, was increased because of the defective data. It is presumed that overstated cost or pricing data increased the contract price in the amount of the defect plus related overhead and profit or fee. Therefore, unless there is a clear indication that the defective data was not used or relied upon, the price will be reduced in such amount.

30. Audit of Cost or Pricing Data. When cost or pricing principles are applicable, the STATE may require an audit of cost or pricing data.
31. Records Retention. The CONTRACTOR and any subcontractors shall maintain the books and records that relate to the Contract and any cost or pricing data for three (3) years from the date of final payment under the Contract.
32. Antitrust Claims. The STATE and the CONTRACTOR recognize that in actual economic practice, overcharges resulting from antitrust violations are in fact usually borne by the purchaser. Therefore, the CONTRACTOR hereby assigns to STATE any and all claims for overcharges as to goods and materials purchased in connection with this Contract, except as to overcharges which result from violations commencing after the price is established under this Contract and which are not passed on to the STATE under an escalation clause.
33. Patented Articles. The CONTRACTOR shall defend, indemnify, and hold harmless the STATE, and its officers, employees, and agents from and against all liability, loss, damage, cost, and expense, including all attorneys fees, and all claims, suits, and demands arising out of or resulting from any claims, demands, or actions by the patent holder for infringement or other improper or unauthorized use of any patented article, patented process, or patented appliance in connection with this Contract. The CONTRACTOR shall be solely responsible for correcting or curing to the satisfaction of the STATE any such infringement or improper or unauthorized use, including, without limitation: (a) furnishing at no cost to the STATE a substitute article, process, or appliance acceptable to the STATE, (b) paying royalties or other required payments to the patent holder, (c) obtaining proper authorizations or releases from the patent holder, and (d) furnishing such security to or making such arrangements with the patent holder as may be necessary to correct or cure any such infringement or improper or unauthorized use.
34. Governing Law. The validity of this Contract and any of its terms or provisions, as well as the rights and duties of the parties to this Contract, shall be governed by the laws of the State of Hawaii. Any action at law or in equity to enforce or interpret the provisions of this Contract shall be brought in a state court of competent jurisdiction in Honolulu, Hawaii.
35. Compliance with Laws. The CONTRACTOR shall comply with all federal, state, and county laws, ordinances, codes, rules, and regulations, as the same may be amended from time to time, that in any way affect the CONTRACTOR'S performance of this Contract.
36. Conflict Between General Conditions and Procurement Rules. In the event of a conflict between the General Conditions and the procurement rules, the procurement rules in effect on the date this Contract became effective shall control and are hereby incorporated by reference.
37. Entire Contract. This Contract sets forth all of the agreements, conditions, understandings, promises, warranties, and representations between the STATE and the CONTRACTOR relative to this Contract. This Contract supersedes all prior agreements, conditions, understandings, promises, warranties, and representations, which shall have no further force or effect. There are no agreements, conditions, understandings, promises, warranties, or representations, oral or written, express or implied, between the STATE and the CONTRACTOR other than as set forth or as referred to herein.
38. Severability. In the event that any provision of this Contract is declared invalid or unenforceable by a court, such invalidity or unenforceability shall not affect the validity or enforceability of the remaining terms of this Contract.
39. Waiver. The failure of the STATE to insist upon the strict compliance with any term, provision, or condition of this Contract shall not constitute or be deemed to constitute a waiver or relinquishment of the STATE'S right to enforce the same in accordance with this Contract. The fact that the STATE specifically refers to one

provision of the procurement rules or one section of the Hawaii Revised Statutes, and does not include other provisions or statutory sections in this Contract shall not constitute a waiver or relinquishment of the STATE'S rights or the CONTRACTOR'S obligations under the procurement rules or statutes.

40. Pollution Control. If during the performance of this Contract, the CONTRACTOR encounters a "release" or a "threatened release" of a reportable quantity of a "hazardous substance," "pollutant," or "contaminant" as those terms are defined in section 128D-1, HRS, the CONTRACTOR shall immediately notify the STATE and all other appropriate state, county, or federal agencies as required by law. The Contractor shall take all necessary actions, including stopping work, to avoid causing, contributing to, or making worse a release of a hazardous substance, pollutant, or contaminant, and shall promptly obey any orders the Environmental Protection Agency or the state Department of Health issues in response to the release. In the event there is an ensuing cease-work period, and the STATE determines that this Contract requires an adjustment of the time for performance, the Contract shall be modified in writing accordingly.

State of Hawaii
DEPARTMENT OF LAND AND NATURAL RESOURCES
Division of Forestry and Wildlife
Honolulu, Hawaii 96813

January 13, 2006

Chairperson and Members
Board of Land and Natural Resources
State of Hawaii
Honolulu, Hawaii

Land Board Members:

SUBJECT: REQUEST FOR APPROVAL TO ENTER INTO EIGHTEEN CONTRACTS TO IMPLEMENT THE HAWAII INVASIVE SPECIES COUNCIL RESEARCH AND TECHNOLOGY GRANT PROGRAM PROJECTS: WITH THE BISHOP MUSEUM FOR "IMPLEMENTING EARLY DETECTION;" WITH THE UNIVERSITY OF HAWAII FOR A STUDY OF "DINOFLAGELLATES IN BALLAST WATER;" WITH THE UNIVERSITY OF HAWAII FOR A STUDY OF "INVASIVE ANT CONTROL;" WITH THE USDA NATIONAL WILDLIFE RESEARCH CENTER FOR DETERMINING "RODENTICIDE EFFICACY;" WITH THE USDA NATIONAL WILDLIFE RESEARCH CENTER TO RESEARCH A "BROWN TREE SNAKE ATTRACTANT;" WITH THE UNIVERSITY OF HAWAII FOR FINDING "ERYTHRINA GALL WASP PARASITIDS;" WITH THE USDA NATIONAL WILDLIFE RESEARCH CENTER FOR TESTING "BROWN TREE SNAKE BAITS;" WITH THE UNIVERSITY OF HAWAII FOR "INVASIVE SPECIES DATABASE ENHANCEMENTS;" WITH THE HAWAII DEPARTMENT OF AGRICULTURE FOR "MANAGEMENT OF ERYTHRINA GALL WASP;" WITH THE USDA AGRICULTURAL RESEARCH SERVICE FOR "NETTLE CATERPILLAR LURE APPLICATIONS;" WITH THE UNIVERSITY OF HAWAII OR TRI-ISLE RESOURCE CONSERVATION AND DEVELOPMENT FOR A "COQUI-FREE CERTIFICATION PROGRAM;" WITH BISHOP MUSEUM FOR "AQUATIC INVASIVE SPECIES EXPERTISE;" WITH MCCLAY ECOSCIENCE FOR A "MICONIA BIOCONTROL SURVEY IN MEXICO;" WITH THE USDA INSTITUTE OF PACIFIC ISLANDS FORESTRY OR

Approved by the Board of
Land and Natural Resources
at its meeting held on

1/13/06

ITEM C-2

THE UNIVERSITY OF HAWAII TO SURVEY FOR A
“HIMALAYAN BLACKBERRY BIOCONTROL;” WITH THE
USDA INSTITUTE OF PACIFIC ISLANDS FORESTRY OR
THE UNIVERSITY OF HAWAII FOR A “*MICONIA*
BIOCONTROL EVALUATION;” WITH COLORADO STATE
UNIVERSITY TO STUDY “WEST NILE VIRUS IN
PARAKEETS;” AND WITH THE US FISH AND WILDLIFE
SERVICE OR THE NATIONAL WILDLIFE RESEARCH
CENTER TO REFINE A “MULTI-PEST EXCLUSION FENCE”

This board submittal approves contractual relationships for eighteen projects that address research and technology needs for invasive species priorities, and authorizes the Chairperson to develop and enter into contracts for these services, subject to the availability of funds and approval as to form by the Attorney General's Office.

BACKGROUND:

The 2003 State Legislature authorized the creation of the Hawaii Invasive Species Council, and stated “the silent invasion of Hawaii by alien invasive species is the single greatest threat to Hawaii's economy, natural environment, and the health and lifestyle of Hawaii's people and visitors.” Hawaii is one of the seven states in the nation that has recognized the need for coordination among all state agencies, at a cabinet level, that have responsibility to control invasive species on the ground, as well as regulate the pathways in which invasive species can gain access into the state.

The creation of the council (whose members are the directors or chairs of the Departments of Land and Natural Resources (DLNR,) Agriculture (DOA,) Business, Economic Development, and Tourism (DBEDT,) Health (DOH,) Transportation (DOT) and University of Hawaii (UH,) and other department directors (Hawaiian Home Lands (DHHL,) Commerce and Consumer Affairs (DCCA) and Defense (DOD)) now provides the institutional framework for leadership and coordination for a statewide invasive species prevention and control program.

The first official meeting of the HISC convened on October 29, 2003. HISC members adopted a working committee structure to look at laws, policies, procedures, and needs in the areas of ongoing prevention, early detection/rapid response, research and the application of new technology, and increasing public awareness.

HISC, through the DLNR, received an administrative budget of \$4 million for the year to provide support for the operations of the HISC and its cooperating partners, to develop a comprehensive state-wide invasive species prevention, control, research, and outreach program. These funds will be matched 1:1 with non-state dollars. Of that amount, \$700,000 was budgeted for the Research and Technology Program. A total of fifty sealed project proposals were received and eighteen were selected for funding.

These eighteen Research and Technology projects total \$600,000 and are matched with \$711,043 in non-state dollars. They are:

<u>Attach- ment</u>	<u>Project</u>	<u>Recipient</u>	<u>Amount</u>
A	Implementing Early Detection	Bishop Museum	\$80,000
B	Dinoflagellates in Ballast Water	University of Hawaii (UH)	\$71,000
C	Invasive Ant Control	University of Hawaii	\$70,000
D	Rodenticide Efficacy	USDA NWRC	\$69,700
E	Brown Tree Snake Attractant	USDA NWRC	\$60,835
F	<i>Erythrina</i> Gall Wasp Parasitoids	University of Hawaii	\$45,000
G	Brown Tree Snake Baits	USDA NWRC	\$30,725
H	Invasive Species Database Enhancements	University of Hawaii	\$29,288
I	Natural Enemies of <i>Erythrina</i> Gall Wasp	HDOA	\$23,899
J	Management of <i>Erythrina</i> Gall Wasp	University of Hawaii	\$22,000
K	Nettle Caterpillar Lure Applications	USDA Ag. Research Svc.	\$20,000
L	"Coqui-free" Certification Program	Tri-Isle RCD or UH	\$15,000
M	Aquatic Invasive Species Expertise	Bishop Museum	\$15,000
N	<i>Miconia</i> Biocontrol Survey in Mexico	McClay Ecoscience	\$14,625
O	Himalayan Blackberry Biocontrol	Inst. Pac. Is. Forestry. or UH	\$12,000
P	<i>Miconia</i> Biocontrol Evaluation	Inst. Pac. Is. Forestry. or UH	\$7,700
Q	West Nile Virus in Parakeets	Colorado State University	\$6,864
R	Multi-pest Exclusion Fence	USFWS or USDA NWRC	\$6,364

The project with Hawaii Department of Agriculture (Attachment I) may be awarded as a cooperative agreement with an interdepartmental transfer. Nine other projects of amounts less than \$25,000 (Attachments J-R) may be fulfilled with purchase orders instead of contracts. The project Multi-pest Exclusion Fence (Attachment R) may be combined with the project Rodenticide Efficacy (Attachment D) to create one contract for both projects with the USDA NWRC as the recipient of an amount of \$76,064.

CONTRACT PROVISIONS

The invitation for bids for these proposals was published on the State Procurement Office web site on October 3, 2005 (IFB No. HISC RT 004) and November 7, 2005 (IFB No. HISC RT 005).

Contracts will be negotiated with the principal investigators authorized by the recipients, to implement the projects according to their project descriptions. The standard state contract form will be used and approved by the Attorney General's Office.

January 13, 2006

Upon approval by the board, the division will submit the contracts for review and approval as to form by the Attorney General, and process the documents for signature by the chairperson.

RECOMMENDATION:

That the board: 1) approve implementation of the HISC Research and Technology Program for FY06; and 2) authorize the chairperson to negotiate and execute contracts subject to:

- a. Scope of services (contract deliverables) as described in the attached proposals,
- b. Availability of state funds; and
- c. Approval as to form by the Attorney General's Office.


Respectfully submitted,



PAUL J. CONRY, Administrator
Division of Forestry and Wildlife

Attachments A-R

APPROVED FOR SUBMITTAL:


for PETER T. YOUNG, Chairperson
Board of Land and Natural Resources

HAWAII INVASIVE SPECIES COUNCIL
RESEARCH AND TECHNOLOGY PROGRAM

REQUEST FOR PROPOSALS

PROPOSALS DUE: December 8, 2005.

The primary purpose of the program is to initiate and support research that will result in improved prevention, management, or control strategies for alien invasive species in Hawai'i.

Program Goals

- Encourage researchers to address the problems created by alien invasive species.
- Encourage the implementation of technology to prevent the establishment of invasive species.
- Develop effective, science-based management approaches to control alien invasive species.
- Effectively communicate the results of research to the field where it can be applied.
- Promote interagency collaboration and stimulate new partnerships.

General Research Priorities

The Hawaii Invasive Species Council seeks to promote effective tools for the control and management of alien invasive species using the best available scientific information. Research proposals that provide clear links between management and research or the effective application of technology will be given first priority.

Proposal Guidelines

- a. Contact Information Cover Sheet (not counted in the five page maximum).
- b. Proposal using the following format (five page maximum excluding cover sheet for ALL of the following sections, 12 point font, 1 inch margins). CV's will not be counted towards the five page limit.
 - Problem statement
 - Methodology or approach
 - Schedule of activities
 - Description of deliverable products
 - Personnel and Partners
 - Budget

Cover Sheet:

Provide contact information (postal address, phone, e-mail and fax) for the principal investigator of the proposal. The cover sheet should also have the title of the proposal and the total amount requested.

Problem Statement:

Briefly describe the significance of the problem, as well as the manner in which the proposed work will make a contribution to solving the problem. The problem statement should describe how technology will be applied to address invasive species or how the scientific question will affect the development of improved management practices relating to Hawaii's invasive species. Provide a brief review of past and current research relevant to the problem.

Methods or Approach:

Describe the objectives, approach, and methods used in the proposed project.

Schedule of Activities:

Provide an activities timetable, including start date and project completion date. Project completion date must include the completion of deliverable products.

Description of Deliverable Products:

Describe deliverable product and how the project will effectively communicate the results of the research.

Personnel and Partners:

Indicate who will carry out the research, as well as a brief statement of the investigator(s') qualifications and experience with regard to the proposed work. Include one copy of the CV for the principal investigator. The CV will not be counted as part of the five page proposal length limit.

Budget:

Clearly delineate costs to be met by HISC and those to be provided by other sources. Funds must be matched 1:1 with non-State of Hawaii funds. In-kind resources will be considered.

Grant Size

Availability of funds may necessitate that we fund a proposal at an amount lower than requested. If this occurs the PI may be asked to provide a revised scope of work.

Project Selection & Criteria

Proposals will be reviewed by an advisory panel representing resource managers and the scientific community. In addition to supporting research that will lead to improved management strategies, it is the intent of the program to support research of the highest quality. The criteria to be used in evaluating proposed projects include: 1) relevance to Hawaii's invasive species issues; 2) clearly developed hypotheses and methods; 3) utility of research results; 4) applicability of results; and 5) how the results will be communicated.

Schedule

Proposals due:	postmarked or received electronically by midnight, December 8, 2005
Notification of award or denial:	January 2005

Inquiries

Please direct inquiries to

Mark Defley
Plan Implementation Manager
Hawaii Invasive Species Council
Phone (808) 587-4154 Fax (808) 587-0160
Mark.Defley@hawaii.gov

The **original proposal and 5 copies** should be sent to:

Mark Defley
Plan Implementation Manager
Hawaii Invasive Species Council
1151 Punchbowl Street, Room 325
Honolulu, HI 96813

OR

Send proposals electronically to DLNR.HISC@hawaii.gov
Required: Call (808) 587-4154 to confirm receipt.